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(54) Title: METHOD FOR CONTROLLING ACCESS TO RECORDED DATA			
(57) Abstract Access to a complete data base stored on optical disk media (10) is limited to portions of the data base to which individual users are entitled by provision of an additional code (16) on the optical disk (10), indicating the portions of the data base which the customers may access. The disk reader comprises an additional reader for reading the additional code (16) and means (26) for preventing access to other portions of the data base. The additional code (16) may be conventional bar code.			

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-1-

METHOD FOR CONTROLLING ACCESS TO RECORDED DATA

Field of the Invention

This invention relates to methods of providing customers with a copy of a complete data base but preventing their access to portions of the data base other than those for which they have paid the proper license fee.

Background and Objects of the Invention

Recent developments in data storage, most particularly development of optical disks, have led to new problems with respect to marketing methods for data bases stored thereon. It is now feasible to encode enormous amounts of data onto a single optical disk and provide a reasonably economical laser disk reader for accessing the data. For example, it is now possible to reproduce all of the information concerning all of the airports of the world onto a single disk. This information includes essentially all physical data required for navigation of airplanes including such things as the locations and frequencies or radio beacons, their bearings from other beacons, physical descriptions of airports, including sufficient information to enable a video picture of the approach to the airport to be displayed to a pilot, together with depiction of landmarks, mountains, rivers, towers, buildings, roads, railway lines, and all other relevant information. As mentioned, all this information can now be stored on a single optical disk, and it is or will shortly be within the skill of the art to provide a disk reader with display sufficiently compact to fit into the cockpit of an airplane. In this way, the pilot may be provided with all the information required for navigation, including a video "picture" of the airport at which he is to land, right in the cockpit of his airplane. However, preparation of this massive data base for storage on an optical disk is a major task. Similarly, creation of the disk itself is quite complicated, involving as it does the creation of "masters", intermediate stages in the finishing of the disks, as well as

SUBSTITUTE SHEET

-2-

their production, storage, and distribution. For this reason, manufacturers would prefer that as few different disks as possible be manufactured, so that the costs of production of the disks could be amortized over as large a customer base as possible.

It will be appreciated, however, that some pilots only fly in certain areas, for example, New England, while others fly nationwide, and still others worldwide. Provision of a single version of a disk with all the data on it would necessitate that New England pilots would have to purchase a data base containing data on foreign countries, as well as on the remainder of the United States. Ordinarily this would mean that all pilots would pay the same price for the data base. However, it would seem inequitable to require pilots requiring access to only a small portion of the data base to pay the same as pilots desiring access to larger portions or all of the data base; and of course the pilots would prefer to only purchase that portion of the data base which they might use.

In order that a single version of the disk can be manufactured, containing the complete data base, but wherein the price paid for the disk can be determined in accordance with the portion of the data actually needed by the user, some means for prevention of access of the user to other portions of the data base should be provided, and this is an object of this invention.

It is a further object of the invention to provide an optical disk reader for reading data from an optical disk, comprising means for control of the access of the user to predetermined portions of the data base, such that the manufacturer of the disk has control over the access of users to specific areas of the disk, and in which neither the disk reader apparatus, the disk itself, nor their manufacture is unduly complicated by the provision of the limited access feature.

Summary of the Invention

The above needs of the art and objects of the

SUBSTITUTE SHEET

-3-

invention are met by the present invention which comprises an optical disk reader comprising a second reader adapted to read an encoded symbol indicating the portions of the disk to which the user is entitled to have access. Typically, this additional encoded symbol can be a bar coded label attached to a portion of the disk which is not used for storage of the data base information. A simple bar code reader can then be incorporated into the optical disk drive, and used to provide an access code signal to means for limiting access to the data base, included in the main data reading circuitry of the optical disk drive.

Brief Description of the Drawing

The single figure is a block diagram outline of a system providing limited access to a data base in accordance with the invention.

Description of the Preferred Embodiments

As mentioned above, the present invention is designed to solve the problem of providing a complete copy of a given data base to users who in effect pay a license fee for only a portion of the data base, while giving them access only to that portion, by providing means for insuring that the customers do not have access to the portions of the data base for which they have not paid. The sole figure of this application shows an apparatus for achieving these goals. The invention also provides a way of limiting access to portions of a data base for other purposes, such as data security. For example, various individuals within a company have various uses for data concerning the company's operations. According to the invention, all users can be provided with the complete data base, but access to sensitive portions can be limited to those who "need to know" according to the invention.

A record medium 10 is shown being accessed on opposite sides by an access code detection device 12 discussed in detail below, and a data access device 14, also to be

SUBSTITUTE SHEET

-4-

discussed in detail. In the preferred embodiment, the access code is encoded on a bar coded label 16 which may be attached to one surface of the disk 10 at its point of manufacture in accordance with the customer's order. Other code types, such as optically readable characters or various magnetic recording devices, are the equivalent of the bar code. The access code on the label indicates those portions of the disk to which the user is entitled to have access. Thus the label "customizes" a universal disk containing a complete data base to one which in effect only contains the portions of the data base needed by the user. For example, it is now economically feasible to encode all worldwide data relevant to airplane flight, such as airport locations, location and frequency of radio direction beacons, indication of weather station information, pictorial representations of the approach paths to various airports and the like on a single laser disk of conventional type. It will be appreciated that pilots who only fly, for example, east of the Mississippi River will only be interested in data for that area, and would naturally be unwilling to pay the same price for a copy of the entire data base as did a pilot who flew worldwide; this would oblige such a pilot to buy a lot of useless data. However, the cost of production of such optical disks is so high that it would be prohibitive to manufacture different disks for the innumerable different users. Therefore, according to the invention, one sells the pilot who stays east of the Mississippi a complete disk, but charges him only for the relevant portion of the data, and only allows him access to the portion for which he has paid.

According to the invention, therefore, disks 10 comprising the entire data base are manufactured. Labels 16 indicating those portions of the disk to which each individual user is to have access may be added upon receipt of order, or disks with various limiting labels may be inventoried. Dealers might similarly be supplied with disks and selected labels. Typically the label will be on the upper surface of the disk, away from the data, which is typically encoded on the lower

SUBSTITUTE SHEET

-5-

side of the laser disk. A light source 18 illuminates the code which is read by a conventional detector 20. As mentioned, bar codes are one possibility; magnetic stripe coding as on credit cards is another; optically readable characters are a third. Suitable units for reading these and other code types are available from a number of sources. The output of the detector is decoded at 22 and converted into conventional binary symbols which are then used to access a read only memory (ROM) 24 which outputs access enable signals, indicating those portions of the disk to which the user is entitled access. The access enable signals are used by access controller 26. Access controller 26 is included in the data path between laser 28 and detector 30, which together read the data from the disk, error detection and correction circuitry 32 (if used), and decoder 34 which converts the encoded data stored on disk 10 to usable signals. Access to these signals is controlled by the access controller 26 in accordance with the access enable signals, thus allowing only the correct data to be supplied to the user's computer or other display device 36, 38. Thus, the user will be precluded from accessing data to which he is not entitled according to the code on the bar code label 16.

While the drawing shows discrete components for decoder 22 and access controller 26, in a presently preferred embodiment these functions are performed by a microprocessor which controls the optical drive. However, the showing according to the figure may be somewhat more clear. Similarly, the access enable signals, indicated as being stored on ROM 24, may in fact be written on the disk; these signals would then be read first, upon power-up of the drive, and used in conjunction with the signals from the label 16, to control access to the various portions of the disk.

In this connection, note that the signals written to the ROM or to the disk effectively subdivide the data base. In the airplane pilot case, this permanently written data would be divided into a dozen or more relevant geographic regions. The encoded label would then "customize" the data base by

SUBSTITUTE SHEET

-6-

indicating those of the regions to which the user was entitled to have access. In the company data base example, the data would be divided according to subject matter, e.g., "Executive Personnel", "Hourly Personnel", "10-K Filings", "Secured Debt", "Accounts Receivable", "Model 290 Technical Specification Version 2", and the like. Each of these categories might be provided with an access code; each user's individual label would indicate the codes of the files (or classes of files) to which he was entitled to have access. The label code could further limit access to recalling the data only, or might permit alteration by the particular user.

Another possible use of the label 16 is in providing specific information concerning the user. For example, again discussing the airplane pilot case, a pilot when he ordered a copy of the disk with a bar code label to allow him to access the navigational data from a particular part of the world, might also indicate the type of airplane he flew, as well as any personal flight plan preferences. This information could then be used in conjunction with remote telecommunications devices to supply him with additional information concerning the navigation of the plane. For example, there are now available commercial weather services which for a fee provide pilots individualized weather reports concerning a flight path between selected airports. This service can be further tailored to the individual using information concerning his aircraft, for example, its cruising speed and altitude, and with the pilot's preferences, e.g., that he prefers to fly at low altitudes where possible. By storing this information concerning the pilot and his aircraft on the label it could be automatically transmitted to the weather service which could then provide a unique weather report, including updates on any failed navigational beacons or the like, especially tailored to that particular pilot's needs and preferences. This would also provide a convenient method of seeing that the pilot is correctly billed for this service. The equipment for providing such a radio transmission and for receiving the customized

SUBSTITUTE SHEET

-7-

weather report can easily be integrated with the controller for the optical disk discussed above.

While a preferred embodiment of the invention has been disclosed, it should be appreciated that numerous modifications and variations thereon are possible without departure from its spirit and scope, which is therefore not to be limited by the above exemplary disclosure but only by the following claims. In particular, the same reader could be used to read both the data from the data base itself and the encoded representations of the portions of the data base to which the users are permitted access.

SUBSTITUTE SHEET

-8-

I claim:

1. Method for limiting access to a predetermined subset of a larger data base stored on readable media, comprising the steps of providing first means for reading data from said data base, providing an encoded indication on said media of the predetermined subset of the data base, providing a means for reading said encoded indication of the subset of the data base and providing means, responsive to said means for reading said encoded indication, for preventing access to said data base other than in accordance with said encoded indication.

2. The method of claim 1 wherein said media is optical disk media, said first means for reading comprises laser means adapted to read data from said optical media, said encoded indication is bar code and said second means for reading is a bar code reader.

3. Apparatus for reading data from media, said media having a data set permanently written thereon, said media further having an encoded representation of one or more portions of said data set to which users are permitted access written thereon, said apparatus comprising first means for reading said data set from said disk, second means for reading said encoded representation of the portions of the data set to which the users are to have access, and means responsive to said second means for permitting each user to have access only to the portions of the data set to which said user is to have access.

4. The apparatus of claim 3 wherein said media is laser readable optical disk media, and said first reader is a laser reader.

SUBSTITUTE SHEET

5. The apparatus of claim 4 wherein said encoded representation of the one or more portions of the data set to which the user is entitled to have access comprises bar code and said second means for reading is a bar code reader.

6. As an article of manufacture, unitary storage media means having written permanently thereon all of a predetermined data set, and further comprising an encoded representation of a portion of said data set to which a user is to be permitted access.

7. The article of manufacture of claim 6 wherein said media means is a laser readable optical disk, and said encoded representation of a portion of the data comprises bar code.

8. A system for the dissemination of information to users in which individual users are entitled to have access only to selected portions of a larger data base, the entirety of said data base being supplied to each of said users on permanently written machine readable media, said media further comprising an encoded representation of one or more portions of the entirety of said data base to which each of said users is entitled to have access, said system comprising media reader means comprising means for reading data from said data base on said media, second means for reading said encoded representation of the portion of the data set to which any given user is entitled to have access, and means responsive to said second means for reading, for preventing access of said users to the remainder of said data base.

9. The system of claim 8, wherein said media is optically readable disk media, and said encoded representation of the portion of the data set to which a given user has access is a bar code symbol.

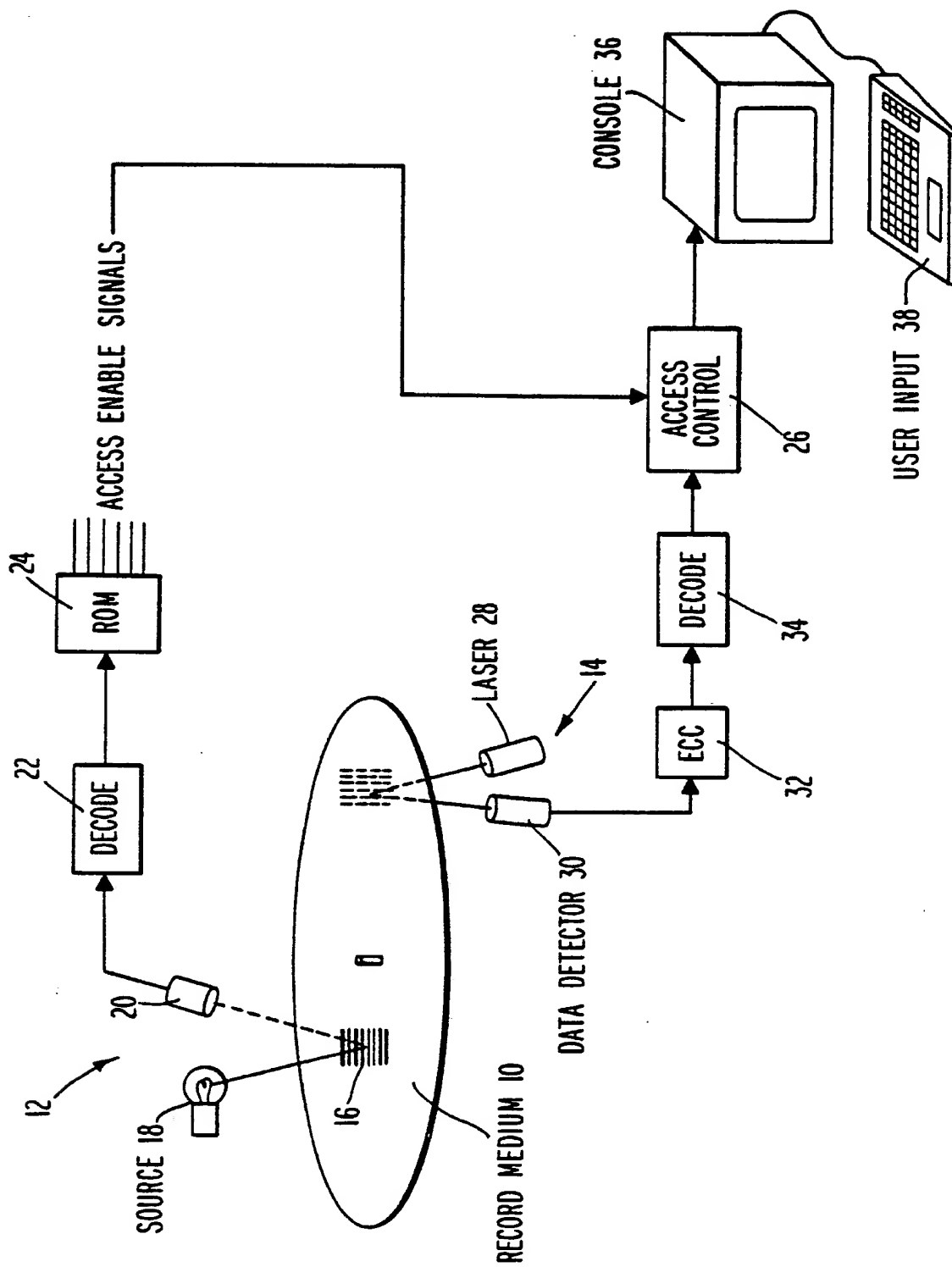
SUBSTITUTE SHEET

-10-

10. The system of claim 9 wherein said reader means comprises first reader means for reading data from said optically readable disk media and second reader means for reading said bar code symbol.

SUBSTITUTE SHEET

1 / 1



INTERNATIONAL SEARCH REPORT

International Application No

PCT/US86/00215

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) ³		
According to International Patent Classification (IPC) or to both National Classification and IPC		
INT. CL. (4)	G11B 7/00	
U.S. CL.	369/32	
II. FIELDS SEARCHED		
Minimum Documentation Searched ⁴		
Classification System	Classification Symbols	
U.S.	235/419,462,472,495; 358/342; 369/32,33,47,50,52; 434/307,310,314,315	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched ⁵		
III. DOCUMENTS CONSIDERED TO BE RELEVANT ¹⁴		
Category [*]	Citation of Document, ¹⁶ with indication, where appropriate, of the relevant passages ¹⁷	Relevant to Claim No. ¹⁸
X	US, A, 4,481,412, (Fields), 06 November 1984	1-10
<p>[*] Special categories of cited documents: ¹⁵</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"&" document member of the same patent family</p>		
IV. CERTIFICATION		
Date of the Actual Completion of the International Search ²	Date of Mailing of this International Search Report ²	
19 February 1986	20 MAR 1986	
International Searching Authority ¹	Signature of Authorized Officer ²⁰	
ISA/US	Robert L. Richardson	